



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

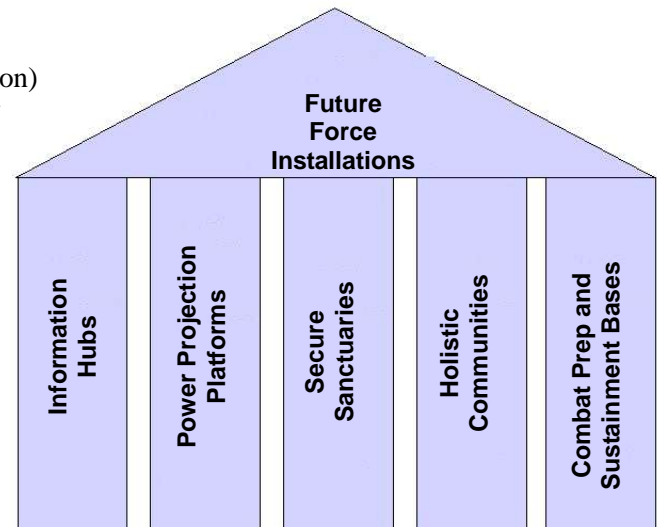
Fort Future

Problem

Army and Defense Transformation impose new and unprecedented demands on the ability of installations to provide a full spectrum of mission support to the nation's armed forces. In the future, installations will play increasingly important roles in application of combat power around the globe. The Objective Force 2015 white paper (now "Future Force") identifies five important roles for installations; they must function as:

1. Information hubs
2. Power projection platforms
3. Secure sanctuaries (Force Protection)
4. Holistic communities (community support)
5. Combat preparation and sustainment bases.

Although today's installations fill some aspect of these roles already, plans for transformation call for the installation to be an even more integral part of the fight: projecting, commanding, and sustaining forces around the globe more rapidly than ever before.



Future installations must fill five important roles to enable mission accomplishment.

Description

The "Fort Future" research program is producing tools critical to the Army's ability to transform its installations in the timeframe required to support its emerging forces. Fort Future will create a "system of systems" that unites existing and new computer models to form a "virtual installation." Building on currently available and planned Standard Army Management Information Systems (STAMIS) that provide a snapshot of the present, Fort Future will use modeling and simulation (M&S) to help decisionmakers explore alternatives in the complex process of preparing installations to support future forces. Fort Future's key objective is to develop a capability to model, simulate, assess, and optimize installation capability to support the Objective Force. Fort Future will enable installation planners to make strategic decisions by "seeing" results of many different decision scenarios.

Expected Products

Fort Future will use an incremental delivery strategy to validate and refine systems through a proposed new Installation Battle Lab, and to put those systems in the end-users' hands. This system-of-systems will begin with computer models for single installations, and evolve to allow multi-installation analysis that supports regional and national goals. Current progress includes:

1. *Force Projection.* Initial models have already been constructed using Interim Brigade Combat Team (IBCT) examples obtained from the Military Traffic Management Command-Transportation Engineering Agency and Fort Lewis, WA. Working with the Force Projection Battle Lab Support Element, research will determine the degree of correlation between facility condition, planned maintenance, and risk to power-projection capability. Using these models, planners will be able to quantify criticality of facilities and justify resources.

2. *Training and Sustainability.* To ensure the sustainability of training lands and ranges, the Engineer Research and Development Center (ERDC) is currently modeling urban and regional dynamics in a system called the Land-use Evolution Assessment Model (LEAM). The system runs on parallel supercomputers that make complex calculations available to users in minutes. Fort Future will make LEAM available to installation and regional planners through a desktop Web interface. The Sustainable Installations Regional Resource Assessment (SIRRA) methodology provides relative risk rating indicators for ten sustainability issues, which provide information about the installation's ability to train and maintain its mission.
3. *Facility Modeling.* The Facility Composer team is testing the *Facility Composer* system by building a requirements library for IBCT maintenance facilities based on lessons learned from Fort Lewis, WA. An advanced immersive visualization capability is being developed using a facility called the CAVE [Core Automated Virtual Environment] at the University of Illinois—to test the workability of proposed maintenance facilities using computer models of FCS components. This feature will enable a designer to – *virtually* – pull a vehicle into a maintenance bay and visually check factors such as worker and crane access.

Potential Users

Managers and decisionmakers at the installation, regional, or National level will use Fort Future components to set up planning scenarios, conduct dynamic analyses over time periods of up to 30 years, and compare scenario results. Fort Future Tools Version 1.0 (still under development) will be available October 2004. Limited use versions of the Mission Essential Task List (METL) tool, deployment simulation, and Facility Composer are available now, as are LEAM and SIRRA.

An initial application of LEAM was conducted for the Fort Benning/Columbus, GA region, a multi-county region centered on a critical military reservation in the Southeast. Development patterns threaten to envelope portions of the installation, with the possibility of impacting training activities on the installation.

The U.S. Army Corps of Engineers used the SIRRA tool in collaboration with the Center for Army Analysis in 2002 to review installation sustainability in the context of the stationing of forces under Army Transformation. This evaluation was one of many inputs used to rate 19 CONUS installations. Efforts in 2003 are developing sustainability ratings for over 200 CONUS DOD installations.

Projected Benefits

Users of Fort Future at the installation, regional, or National level will be able to set up planning scenarios, conduct dynamic analyses over time periods of up to 30 years, and compare scenario results. Fort Future will allow decisionmakers to:

- Provide an integrated sustainability planning capability to support METL analysis, master planning, and natural and cultural resource planning.
- Simulate and optimize planning for force projection. Metrics will focus on risk-based evaluation of an installation's ability to project forces over time.
- Simulate urban and regional growth around installations as a foundation for analysis of mission sustainability. Factors to be evaluated include encroachment, noise, traffic congestion, habitat, and threatened and endangered species.
- Manage facility requirements to rapidly generate, visualize, and analyze facilities for the Objective Force. The analysis will include force protection and sustainability issues.

Program Manager

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Participating ERDC Laboratory

Construction Engineering Research Laboratory (CERL)